SENATE PUBLIC HEALTH, WELFARE & SAFETY
EXHIBIT NO. 2
DATE: 1/25/13
BILL NO. SB 159

Brain Injury Alliance — MONTANA

Associate Member of the United States Brain Injury Alliance

Building on Our Past, Preparing for the Future

Established 1987

1280 S. 3rd Street West, Suite 4, Missoula, MT 59801
Phone: (406) 541-6442 Fax: (406) 541-4360
Toll-free: (800) 241-6442
Website: www.biamt.org

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Creating a better future through brain injury prevention, research, education and advocacy

January 25, 2013

Senate Committee Public Health, Welfare, and Safety

Chairman Priest and Members of the Committee

Montana's Brain Injury Help Line

Support and education for people living with a brain injury and their families

The Brain Injury Help Line is free public health service for Montanans. The Help Line provides information and support to people with brain injuries during the critical months immediately after the brain injury, when services are critical to help the brain recover; and the Help Line helps people cope with the impacts of brain injury on themselves, their jobs and their families. The Help Line does not provide case management, but it supports survivors and their families solve the puzzle of living with brain injury.

How it works

If a brain injury survivor decides to participate in the service, help line staff will call within six weeks after discharge from the hospital, and then again at six, 12, 18 and 24 months. Help Line staff provides information about brain injury diagnosis and recovery, help identify and troubleshoot problems, connect people with community resources, and educate family members, employers and educators about what it means to live with brain injury.

The person with the brain injury, or parent or family member, can opt out of the program at any time, or they can extend the program after two years if there is an ongoing need for service.

Anyone living with a brain injury, or a family member who is assisting, can also enroll in the Brain Injury Help Line by calling 800-241-6442, or 541-6442 in Missoula.

After every contact, staff follows up with a written letter and additional information. Additional follow-up calls are scheduled as necessary to support the efforts of the survivor or family member to solve a problem.

The Brain Injury Help Line also visits hospitals to educate them about the importance of giving patients the opportunity to sign a release so that they can be enrolled in the Help Line and provides hospitals with information to share with patients before discharge.

* The Brain Injury Alliance of Montana (BIAMT) is the only organization in the state dedicated solely to the purpose of assisting persons with brain injury and their families. The BIAM T is dedicated to providing education, support, advocacy, resources and referrals for individuals with brain injuries and their families but does not provide medical diagnosis or advice.

The Help Line also enrolls any survivors or caregivers who call to ask for help with a new challenge at any time in their lives. Staff ask questions, help develop a plan, send letters and other information, and conduct follow up calls.

Why it is important

Every month 25 Montanans sustain a TBI and die; every day 33 Montanans sustain a TBI and live!

According to one study, about 40% of those hospitalized with a TBI had at least one unmet need for services one year after their injury. The most frequent unmet needs were:

- Improving memory and problem solving;
- Managing stress and emotional upsets;
- Controlling one's temper; and
- Improving one's job skills

TBI can cause a wide range of functional changes affecting thinking, language, learning, emotions, behavior, and sensation. It can also cause epilepsy and increase the risk for conditions such as Alzheimer's disease, Parkinson's disease, and other brain disorders that become more prevalent with age.

Without the Help Line, survivors and family may spend months without the information they need to make decisions and seek services. The lost time can have devastating effects on recovery, family dynamics, and family finances. The Help Line is the only resource of its kind in Montana, and it is available free of charge for everyone who needs it, for as long as they need it.

The Resource Facilitation Project in Minnesota, upon which Montana's Help Line is based, documented these results for resource facilitation:

- A rate of return to work at twice the national average;
- An increased likelihood that children receive appropriate educational supports;
- Increased family support and understanding and decreased family crisis;
- Reduced long-term dependence on public assistance;
- A reduced risk of institutionalization.

During the 2011 session the Brain Injury Help Line received $100,000 of permanent funding. This was and is a major step forward however the actual expense of the Brain Injury Help Line in fiscal years 2012 and 2013 has been closer to $125,000. The Brain Injury Alliance of Montana has contributed the additional funds. In order to maintain the current level of service funding at $150,000 is needed. In order to expand and reach more Montanans affected by brain injury the funding level needs to be $200,000. SB 159 is a sustainable funding source where by Montanans can match and exceed the funds currently established for the Brain Injury Help Line. Please support SB 159!

Respectfully,
Kristen Morgan, Program Director of the Brain Injury Alliance of Montana

* The Brain Injury Alliance of Montana (BIAMT) is the only organization in the state dedicated solely to the purpose of assisting persons with brain injury and their families. The BIAM T is dedicated to providing education, support, advocacy, resources and referrals for individuals with brain injuries and their families but does not provide medical diagnosis or advice.

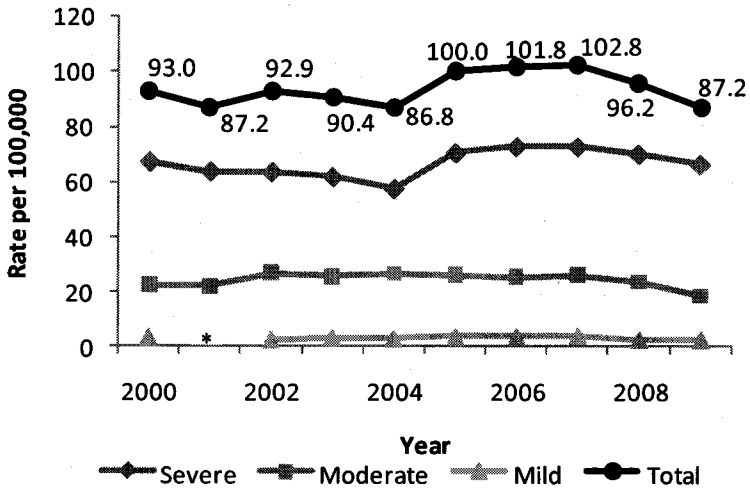
Hospitalizations for Traumatic Brain Injury, Montana
Winter 2011

Classification of Traumatic Brain Injuries

Traumatic brain injuries (TBI) are classified by severity using the Barell Injury Diagnosis Matrix.[1] Using ICD-9 -CM diagnosis codes, TBI related emergency department (ED) visits and hospitalizations are placed into three categories: Type 1 (severe), Type 2 (moderate), Type 3 (mild). Not surprisingly, more severe TBIs are hospitalized in Montana than mild TBIs (Figure 1). ED data are not available to quantify rates of less severe TBIs in Montana at this time. The rate of TBI hospitalization has remained stable since 2000 (Figure 1).

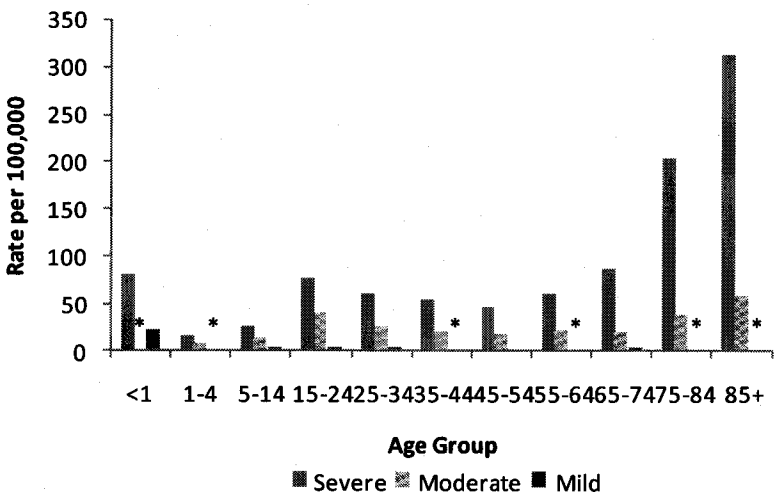
Severe TBIs can cause significant disruption in daily functioning and quality of life. Furthermore, these types of injuries are very prevalent in the US and Montana. This report focuses on the severity and causes of TBI hospitalizations in Montana.

Figure 1. Hospitalization rate of TBI by severity and year, 2000 -2009, Montana



* Too few hospitalizations to calculate a stable rate

Figure 2. Hospitalization rate of TBI by severity and age group, 2000-2009, Montana



* Too few hospitalizations to calculate a stable rate

Table 1. Number of TBI hospitalizations by severity and cause, 2009, Montana

	TBI Classification		
Cause	*Severe*	*Moderate*	*Mild*
Fall	261	55	9
MV crash	146	78	5
No E-code/Unknown	107	8	0
Other Transport	49	14	3
Struck By/Against	39	9	2
Other	44	16	5

Who is most affected by TBIs and what causes them?

- The oldest age groups have the highest rates of TBI hospitalization. Infants have the highest rates of hospitalization for a mild TBI than other age groups (Figure 2).
- Nearly 2/3 of TBI hospitalizations are among men, regardless of severity classification (Data not shown).
- In 2009, the most frequent causes of TBI hospitalization were falls and motor vehicle crashes (Table 1). About 14% of TBI hospitalization had no E-code to classify the cause. Reclassification of these events could change the burden of other TBI hospitalization causes.

Montana Injury Prevention

MONTANA
Department of Public Health & Human Services

Cost of Traumatic Brain Injuries

The financial costs of medical care and the indirect costs such as lost productivity for a person with a TBI are large. The average length of stay in the hospital for a person with a severe TBI in Montana is 7.9 days and 3.6 days for less severe TBIs with an overall average cost of nearly $34,000 per TBI hospital stay (2008-2009, Data not shown). Nearly one half of TBI hospitalizations were covered by a commercial insurance company and another quarter by Medicare (Table 2).

A TBI can be fatal or require continued medical needs. Unsurprisingly, people hospitalized with severe TBIs more frequently died or were discharged to a facility for continued care than were persons hospitalized with other less severe TBIs (Table 3).

Table 2. Percent of TBI hospitalizations by severity and primary insurance, 2000-2009, Montana

	TBI Classification			
Health Insurance	*Severe*	*Moderate*	*Mild*	*Total*
Commercial	44	52	46	46
Medicare	28	17	15	25
Medicaid/ Other Governmental	13	13	23	13
Other/Unknown	15	17	16	16

Table 3. Percent of TBI hospitalizations by severity and discharge location, 2000-2009, Montana

	TBI Classification			
Discharge Location	*Severe*	*Moderate*	*Mild*	*Total*
Routine Discharge (Home)	52	81	81	61
Discharged/Transferred to Another Health Care Facility	37	17	18	31
Other/Unknown	1	1	1	1
Died in the Hospital	10	1	0	7

Conclusion and Recommendations

A TBI is often a preventable injury that can lead to a significant morbidity, mortality, and high costs. In Montana, hundreds of people are hospitalized each year with an TBI. The highest rate of TBI hospitalization is among people aged 75 and older. The most frequent known cause of TBI hospitalization is falling, which accounts for nearly 40% of all TBI hospitalizations. These hospitalizations come at a high cost both financially and in quality of life. The average TBI hospitalization costs tens of thousands of dollars and many require long term medical care and rehabilitation.

We can begin to reduce the TBI hospitalization rate in Montana by encouraging safe behaviors. This includes: the use of seatbelts in vehicles and helmets when riding bikes or skiing and safety gear for athletics. Health care providers can conduct fall assessments with their patients and encourage them to remove home hazards, increase their muscle strength, and conduct medication or vision prescription reviews to decrease their chance for falling. Furthermore, healthcare providers should consider TBI for patients on anticoagulation therapy after a fall or other injury. Finally, coaches and sports health professionals can ensure proper follow-up occurs for athletes who sustain a head injury during practice or games.

For more information on TBIs in Montana see out other summary document at www.dphhs.mt.gov/ems/prevention/prevention_menu.html or contact the Montana Injury Prevention program at: bperkins@mt.gov, 406-444-4126.

Methods and Limitations

Hospital discharge data are from the Montana Hospital Association. Records were included for this analysis if the primary or any of the eight secondary diagnoses were for an TBI. Injury causes were classified using the Centers for Disease Control and Prevention matrix.[2] Records with no E-code are not able to be classified by a cause. Therefore, some injury causes may be underestimated.

This report may underestimate the number of TBI hospitalizations in the state since reporting hospital discharge data is not mandatory. However, the dataset is estimated to contain at least 90% of all inpatient hospital visits in Montana. Furthermore, it is unknown the number of people seen at emergency departments, medical offices, or who never seek medical care for a TBI.

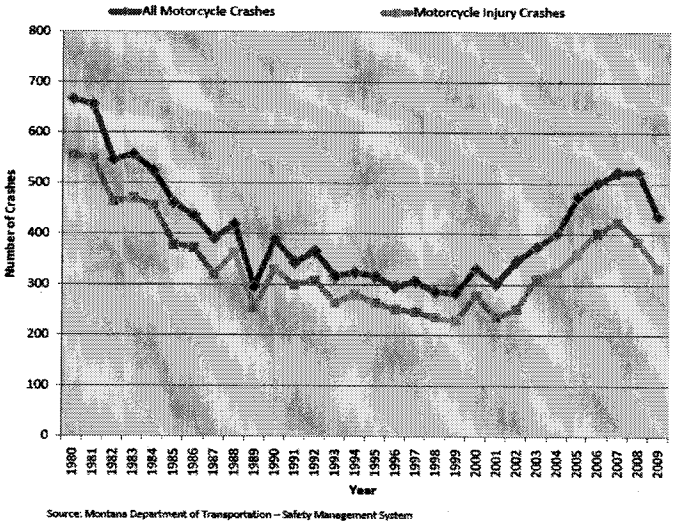
References:
1. Barell V, Aharonson-Daniel L, Fingerhut LA, MacKenzie EJ, et al. An introduction to the Barell body region by nature of injury diagnosis matrix. *Inj Prev* 2002;8:91-6.
2. Centers for Disease Control and Prevention. Recommended framework for presenting injury mortality data. MMWR 1997;46(RR-14) Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/00049162.htm

MOTORCYCLE CRASHES IN MONTANA
SPECIAL REPORT–November 2011

In Montana (MT) between 1980 and 1999, motorcycle fatal and severe injury crashes declined significantly, but in 2000-2008 there was an increasing trend in motorcycle crashes. Fortunately, beginning in 2008, the crash numbers are again declining (Figure 1).

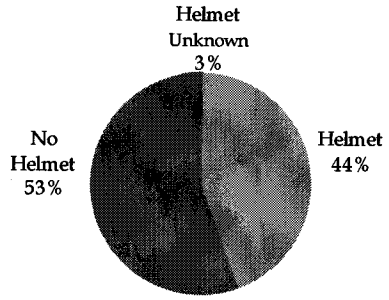
This report describes motorcycle crashes and injury through the analysis of several available data sources in MT, including the Traffic Safety Management System, the State Trauma Registry (STR)and the Hospital Discharge Data.

Figure 1—Number of injury and non-injury motorcycle crashes by year, Montana, 1980-2009



Based on data from the State Trauma Registry, data from a five year period show that there was a total of 996 individuals severely injured from a motorcycle crash who were seen at a trauma hospital in MT. Fewer than half of the motorcycle riders in these crashes were wearing a helmet (Figure 2).

Figure 2—Percent of severe injury motorcycle crashes by helmet use, STR, Montana, 2006-2010



Motorcyclists over the age of 18 are not required to wear a helmet when riding on MT roads and many motorcyclists choose this option. Unfortunately, not wearing a helmet can have serious consequences.

Approximately one third of the motorcycle crash riders seen in MT trauma hospitals sustained a traumatic brain injury (TBI). Many more TBIs (all and severe) occurred among un-helmeted riders (Figures 3 & 4).

Figure 3—Percent of motorcycle crash riders who sustained a TBI (all) by helmet use, STR, Montana, 2006-

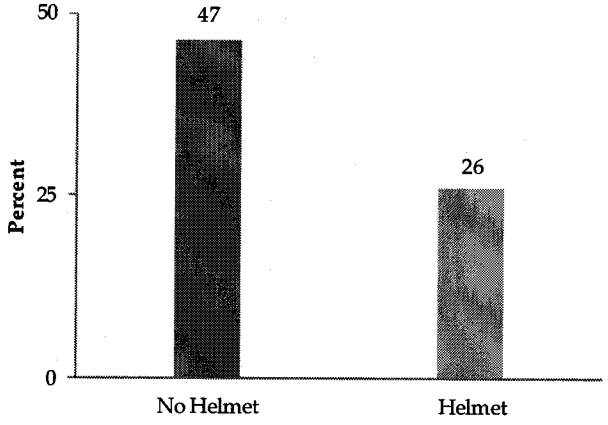
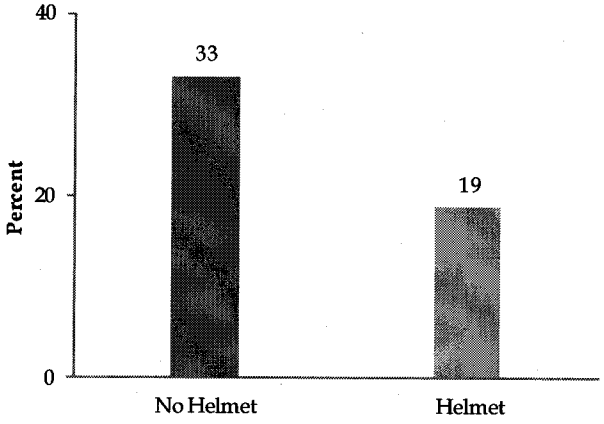


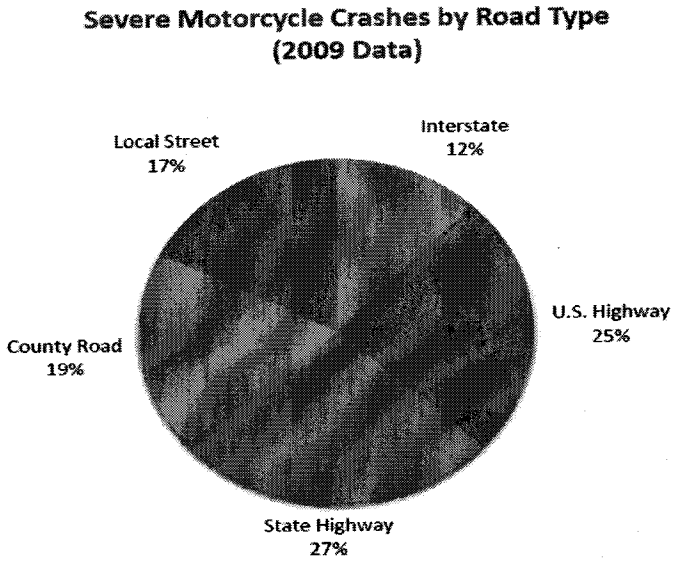
Figure 4—Percent of motorcycle crash riders who sustained a severe* TBI by helmet use, STR, Montana, 2006-2010



*Severe TBI is defined as loss of consciousness (LOC) longer than 24 hours without return to pre-existing conscious level.

The majority of motorcycle crashes resulting in fatal or incapacitating injury occur on highways, followed by county roads, local streets and interstate (Figure 5). The majority of fatal or incapacitating crashes involve only the motorcycle (62% and 38%, respectively) as compared to vehicle vs. motorcycle collision (70% and 31%, respectively). [1]

Figure 5—Severe motorcycle crashes by road type, Montana, 2009



Motorcycle crashes in Montana cost $ 4.6 million in hospital charges in 2010
- MT Hospital Discharge Data

Source: Montana Department of Transportation – Safety Management System

In Summary

An average of 200 individuals are severely injured or killed in a motorcycle crash in Montana each year. The healthcare costs captured in the 2010 Hospital Discharge Data demonstrate a total cost of $4.6 million for hospitalized motorcycle-related injuries. With a third of motorcycle-related injuries being TBIs, this results in a tremendous toll on human lives that are adversely impacted. Although not all motorcycle-related TBIs can be prevented, the data in this report demonstrate that un-helmeted riders sustain a TBI nearly twice as frequently as helmeted riders and wearing a helmet can reduce the frequency of sustaining a severe TBI. Helmets are an effective measure at preventing motorcycle-related TBI, reducing healthcare costs and most importantly, saving lives.

For more information on the data presented in this report, or injury prevention topics in Montana, see our website at www.dphhs.mt.gov/ems/prevention/prevention_menu.html or contact the Montana Injury Prevention program at: bperkins@mt.gov, 406-444-4126.

Methods and Limitations

Data on hospitalization due to injury were supplied by the Montana Hospital Discharge Data System (MHDDS) of the Montana DPHHS. The data are made available through a Memorandum of Agreement with the Montana Hospital Association (MHA) and are the property of the MHA. The authors of this document are responsible for all analyses and conclusions reported. Motorcycle crash was defined as ICD-9 E-code 810-819(.2-.3). [2,3]

References:
1. Montana Department of Transportation. Montana traffic safety problem identification facts report, FFY2011. Available at: www. mdt.mt.gov/safety/docs
2. Centers for Disease Control and Prevention. Recommended framework for presenting injury mortality data. MMWR 1997;46(RR-14) Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/00049162.htm.
3. http://icd9cm.chrisendres.com/index.php?action=contents

TBI "Opt-Out" Proposal

January 2013

What is the TBI "Opt-Out" Proposal?

The current vehicle registration form allows a person to "Opt In" by adding to their total due in order to support the cause of Traumatic Brain Injury (TBI). This proposal would change the "Opt In" to "Opt Out", automatically adding a dollar contribution for brain injury, but allowing people to opt-out and not contribute.

Why does the Governor's TBI Council and the Brain Injury Alliance of Montana support this legislation?

Because this would be a significant, long term source of funding for supports and services important to people with brain injury and their families.

Why is this a good funding source for brain injury supports and services?

For two primary reasons. First, vehicle crashes are the number one cause of TBI related deaths, so it makes sense to tie brain injury funding to vehicle registration. Second, the income from vehicle registrations would increase as the need for support grows, thus making it a sustainable funding source of revenue for the future.

This may be viewed by some as a new tax or a new fee. How is it different?

A place on the form is available for a person to opt out of the $1.00 contribution. If they don't want to pay, they don't.

What other barriers would this proposal face?

The county treasurers have opposed to this proposal in 2007 and 2011, as it somewhat complicates the collection of registration fees. However, with the revised vehicle registration form and the online option this would be treated the same as the $4.00 Fish Wildlife and Parks add on, any extra work would be minimal; an explanation of the revised form and online renewal is available through the online Demo at https://app.mt.gov/walkthrough/vrr/

How much money would this generate?

We estimate that this would generate about $800,000 per year.

How does that compare with the funding received from the current "Opt-In" arrangement?

The current special revenue fund was created on January 01, 2004. The money pays for the Governor's TBI Advisory Council expenses and may be used for information and prevention grants. The following table shows the income and expenses for the TBI fund.

Vehicle Registration Opt-In Income				
	Income	Expenses	Balance	Income per Day
FY04	$1,649	$2	$1,648	$9
FY05	$3,827	$0	$5,475	$10
FY06	$3,600	$0	$9,075	$10
FY07	$5,331	$132	$14,275	$15
FY08	$6,092	$8,480	$11,886	$17
FY09	$6,250	$2,586	$15,550	$17
FY10	$9,659	$95	$25,113	$26
FY11	$9,821	$6,014	$28,920	$27
FY12	$13,908	$4,136	$38,692	$38

How would we use the money?

The Department would propose conducting a listening tour in several sites across the State to seek public input on priority needs and develop the budget accordingly. We anticipate initial funding in two areas. First, to hire a statewide Brain Injury Coordinator position to develop a budget and implement changes brought about by this funding. Second, to continue the work of the Brain Injury Help Line, currently funded by general funds and operated by the Brain Injury Alliance of Montana. Further possibilities would include dollars for prevention activities, regional offices for case management and support services and grants to local support groups, as per the preliminary budget below. The budget was based on anticipated funding of $600,000.

It is important to note that the proposed services would be beneficial to military service men and women who are affected by brain injury but are hesitant to discuss their situation with the Montana Army National Guard or other military organization to which they belong. Also, we feel that the regional staff should be easily accessible to tribal members both on and off the reservations and consideration should be given to locating one of the offices on or near one of the reservations. This emphasis is important because the CDC has shown that the incidence of brain injury among American Indians is about twice that of the rest of Montana's population.

The following briefly explains each line of the preliminary budget:

- Governor's TBI Advisory Council
  The TBI Fund has historically been used to fund the Council's operating expenses, as required by MCA.

- State Brain Injury Coordinator
  There has been widespread agreement from within the State as well as from our federal partners that Montana should have a State FTE dedicated to brain injury. This position would coordinate efforts toward both brain injury prevention and service provision.

- Four Regional Offices
  People with brain injuries and their families need personal contact to help them access services and supports. Providing assistance from a remote site is not always enough. The regional offices would provide case management services and serve as local contacts for information and other assistance.

- Discretionary Dollars
  Each regional office would have $10,000 to use in a discretionary manner, providing assistance that otherwise would not be available.

- Brain Injury Help Line
  Formerly known as Resource Facilitation Service, the Brain Injury Help Line is a proactive service which provides assistance to people with brain injuries and their families. This would be a long term source of funding for this important service.

- Public Information and Prevention Education
  This item has been a historical part of the TBI Fund as specified in MCA, providing grants for public information and prevention education.

- Support Group Grants
  One of the most successful components of the recent federal grant was to provide modest funding to establish and sustain local TBI support groups. These groups have been found to be very helpful in terms of working through the various aspects of a brain injury, finding local resources, and providing peer support.

TBI Opt Out Preliminary Budget	
Ongoing TBI Council Costs	$5,000
State TBI Coordinator Salary and Other Costs	$90,000
Four Regional Offices @ $70,000 per office	$280,000
Regional Discretionary Funding	$40,000
Brain Injury Help Line	$125,000
Public Information and Prevention Education	$45,000
Support Group Grants	$15,000
Total	**$600,000**

Are there other concerns about proceeding with this proposal?

Yes. It would be tempting to transfer some of these dollars to the general fund. The TBI Fund should be used for the sole purpose of brain injury services and supports.

Montana State Legislature

2013 Session

Exhibit: 2

This exhibit is a booklet which cannot be scanned. Only the front & back cover, inside cover and table of content has been scanned to aid in your research.

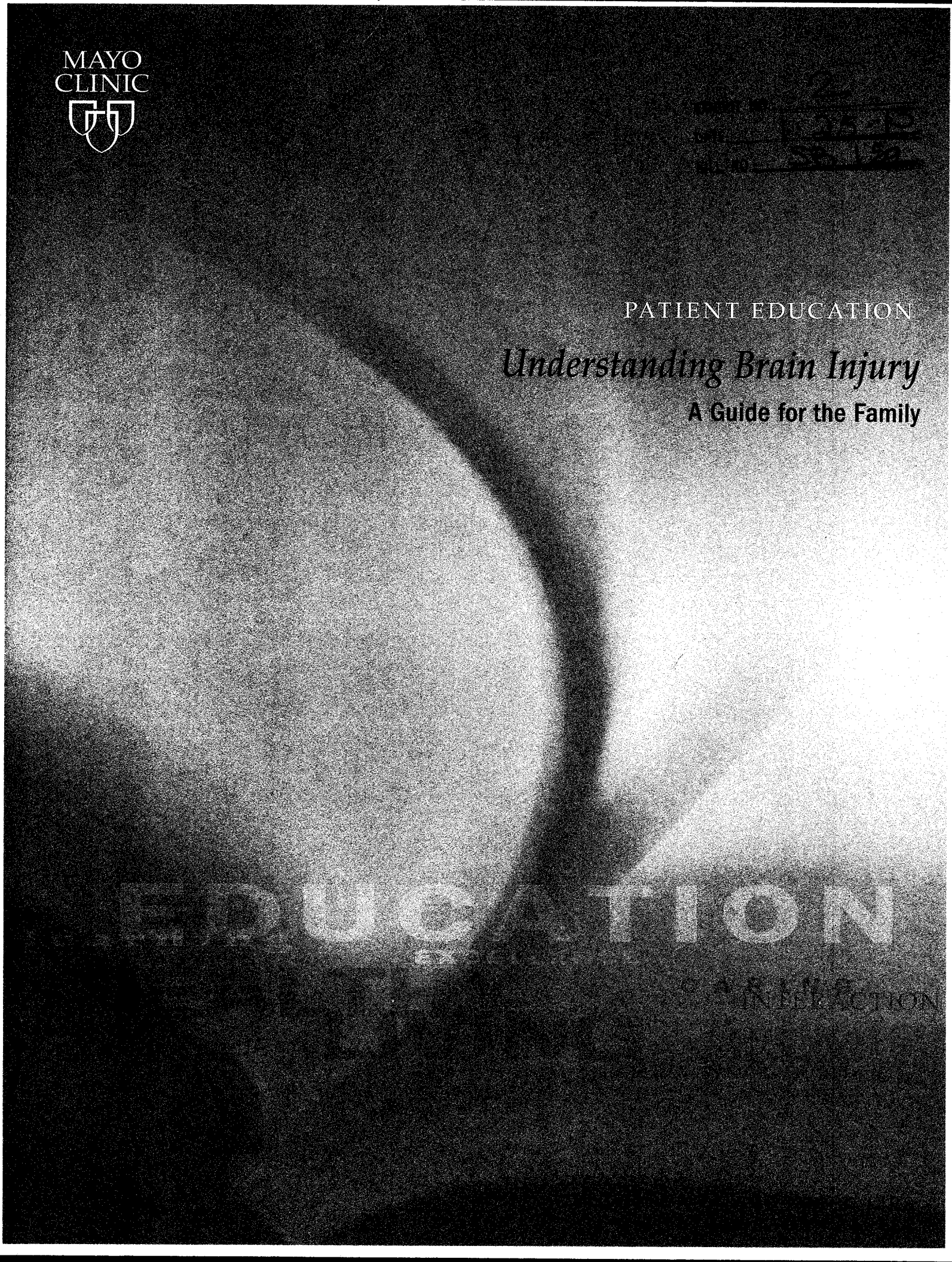
The original exhibits are on file at the Montana Historical Society and may be viewed there.

MAYO CLINIC

PATIENT EDUCATION

Understanding Brain Injury

A Guide for the Family



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This manual was prepared in part with funds from the National Institute for Disability and Rehabilitation Research and Mayo Foundation.

BARBARA WOODWARD LIPS PATIENT EDUCATION CENTER

Mrs. Lips, a resident of San Antonio, Texas, was a loyal patient of Mayo Clinic for more than 40 years. She was a self-made business leader who significantly expanded her family's activities in oil, gas and ranching, even as she assembled a museum-quality collection of antiques and fine art. She was best known by Mayo staff for her patient advocacy and support.

Upon her death in 1995, Mrs. Lips paid the ultimate compliment by leaving her entire estate to Mayo Clinic. Mrs. Lips had a profound appreciation for the care she received at Mayo Clinic. By naming the Barbara Woodward Lips Patient Education Center, Mayo honors her generosity, her love of learning, her belief in patient empowerment and her dedication to high-quality care.

200 First Street SW
Rochester, Minnesota 55905
www.mayoclinic.org

MC1298-01rev0810

EXHIBIT NO. 2
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Brain Injury Help Line

- Individualized
- Accessible
- Holistic
- Participant Driven
- Effective and Valued
- Creative and Flexible

Brain Injury Alliance — MONTANA

Associate Member of the United States Brain Injury Alliance

1280 South 3rd Street West, #4
Missoula, Montana 59801
800-241-6442 or 406-541-6442
www.biamt.org

What is the Brain Injury Help Line Service?

The Brain Injury Help Line (BIHL) is a FREE 24 month telephone-based follow-up system of care provided by the Brain Injury Alliance of Montana.

Who can participate in this free Service:

All Montanans living with brain injury and their families.

How can you participate:

- Sign the *Authorization to Participate Form* through your hospital Emergency Room, Rehabilitation or Discharge Nurse. BIAMT will contact you.

OR

- Contact BIAMT directly at

(1-800-241-6442)
www.biamt.org

What does Help Line provide?

Assessment – identifying the current needs and resources of the individual and his/her family.

Planning – goals and information, service and support needs.

Identification – of necessary information, services and supports.

Negotiation – facilitate access to services, supports and resources.

Monitoring – proactively assess the quality and appropriateness of the services, supports and resources used.

Reassessment – continual review and revision of each component of the process.

Outreach – identify new resources and supports on a continual basis.

Education and Training – increase brain injury awareness.

Emotional Support – proactively listening to the needs of participants.

Advocacy – help participants articulate to others how barriers impact their lives and to assert their rights on their own.

This project is funded (in part) under a contract with the Montana Department of Public Health and Human Services. The statements herein do not necessarily reflect the opinion of the Department. 1,000 copies of this public document were published at an estimated cost of .134 cents per copy, for a total printing cost of $134.00.

EXHIBIT NO. 2
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Prevention & Resources

What services are available

The Brain Injury Association of Montana (BIAMT) provides free information and referral services to all Montanans and families living with TBI and other acquired brain injuries. One of these services is The Resource Facilitation Service (RFS), which provides follow-up support to brain injury survivors, family members, and others. Information and referral to TBI community and statewide services, to local support groups, and to with assistance with financial and insurance issues are examples of help provided upon request. Activities of BIAMT are focused on supporting individuals to successfully cope with a brain injury. For more information on the BIAMT or RFS go to www.biamt.org or call 1-800-241-6442.

Prevention Recommendations

- Support the improvement and inclusion of all existing data sources to describe TBI in Montana.
- Educate high-risk populations about the importance of implementing strategies to use to prevent TBI.
- Promote seatbelt use, suicide and fall prevention, and helmet usage for activities such as riding motorcycles, bicycles, ATVs, horse and bull riding, snowboarding, skiing, and skateboarding.
- Raise awareness among athletic coaches on the potential long term impact of mild TBI and TBI prevention opportunities.
- Provide education on recognizing and treating the early signs of stroke.
- Encourage healthcare providers to raise their index of suspicion for TBI among adults on anticoagulation therapy.

For questions on this report, contact Senior and Long Term Care at 406-444-4077

Methods & Limitations

Data from the Montana Hospital Discharge Data System (MHDDS), Behavioral Risk Factor Surveillance System (BRFSS), and the Montana Office of Vital Statistics were used to compile this document. Data on mortality are collected from death certificates reported to the Office of Vital Statistics. Data on deceased persons with mention of TBI on the death certificate for years 2003-2008 were included in this analysis. TBI was identified by an ICD-10 Traumatic Brain Injury codes S01.0-T90.9. The MHDDS provides access to inpatient hospitalization data provided through the Montana Hospital Association and is based on the Uniform Billing 2004 form. Data from hospitalizations occurring in 2006-2008 are presented in this document. Montana residents hospitalized in Montana diagnosed with TBI are included and identified by ICD9 codes 800-804, 850-854. Race/ethnicity is not available from MHDDs, and ICD-9 Etiology coding is insufficient for reporting injury cause of admission at this time. Reporting for the MHDDS is not mandatory and Veterans Administration Hospitals, Indian Health Service Hospitals, and a few small hospitals do not report data to this system. The lack of available data from the VA and IHS suggests that TBI's are likely significantly underrepresented by this current reporting mechanism and that the problem is far more serious.

The BRFSS survey is a state-based random digit dial telephone survey of a sample of non-institutionalized adults conducted in all 50 states. In 2008, several questions were asked about TBI. All survey participants were asked "Have you had a brain injury that limited you for more than one week in any way in any activities?" and "Thinking about the adults aged 18 and older who live in your household including yourself, how many are currently limited in any way in any activities because of brain injury?" Persons responding yes were asked follow-up questions about cause and availability of help, and suggestions were solicited for needed services. Limitations of this dataset include those inherent in the nature of self-report and the bias introduced because those without a land line telephone are not included in the sample.

This publication is funded in part by Health Resources and Services Administration (HRSA) Grant # H21MC07893 from the U.S. Department of Health and Human Services (HHS), Maternal and Child Health Bureau (MCHB). The contents are the sole responsibility of the authors and do not necessarily represent the official views of HHS. This is in the public domain. 500 copies of this document were published June 2010, at an estimated cost of $577.00. Special thanks goes to Michelle Erb and Brittany Christian for their assistance with research and content.

MONTANA
Department of Public Health & Human Services

Traumatic Brain Injuries Among Montanans

WHAT IS TBI?

Traumatic Brain Injury (TBI) is defined as a disruption of normal brain function resulting from a blow or jolt to the head or a penetrating head injury (CDC, 2006). At the time of injury, each TBI is classified as either mild, moderate, or severe. Generally, a mild TBI is characterized by an initial concussion that may result in short-term memory and concentration difficulties. Usually these difficulties resolve, but for an estimated 15% percent, harmful effects on normal brain (neurological) functioning remain. Repeated mild brain injuries (sports injuries for example) can increase the likelihood of long term effects. Moderate traumatic brain injury is usually characterized by symptoms of lethargy, but is less well defined than the other categories of TBI. Severe TBI results in an extended period of unconsciousness or amnesia and presents the highest risk for death or disability after an injury. People who suffer from mild, moderate or severe TBI can have life-long difficulties resulting from the brain injury. Also, someone who has experienced a TBI is at greater risk for another head injury and increased impairment often results.

The National Perspective

It is estimated that currently 5.3 million Americans (approximately 2% of the total population) have a long-term need for help performing the normal routines of life as a result of TBI (CDC,2006). In the United States, the number of newly diagnosed people living with a TBI continues to grow by 1.4 million each year, making it one of the largest health concerns in the United States.

A Look at Montana: Second in the Nation

In Montana, the death rate from TBI (2000-2004 data) is the 2nd highest in the US at 30.2 deaths per 100,000 people, or 66% higher than the US average (18.2 per 100,000). Among people ages 1-24, the TBI mortality rate was third highest in the US during this same time. Adults 65+ are a particularly vulnerable population for TBI. An average of 75 older adults die each year as a result of TBI. Between 2006 and 2008, 914 people died from TBI in Montana.

While TBI is a concern nationwide, it is especially important in Montana, both because too many people die and because those who survive often live with the harmful effects from the injury for the rest of their lives. Living with a TBI can include dealing with cognitive impairments that interfere with the quality of life for both the individual and their friends and loved ones. It can also result in a loss of personal contribution to their home communities and society in general.

Montana ranks 2nd for TBI mortality

COMMON SIGNS AND SYMPTOMS OF TBI

- Fatigue
- Headaches
- Visual Disturbance
- Memory Loss
- Poor Attention
- Poor Concentration
- Sleep Disturbances
- Dizziness/loss of balance
- Irritability-emotional disturbance
- Feelings of depression
- Seizures
- Decreased speed of processing information
- Difficulties with communication
- Impulsiveness
- Difficulties with sensory perception including touch, smell, sight, taste and hearing
- Trouble regulating body temperature
- Appetite changes
- Change in mood
- Denial/ lack of awareness of the injury

Who is affected by TBI?

In the US, 1.4 million TBIs are reported each year. Of those, 50,000 result in deaths, 235,000 in hospitalizations, and 1.1 million require treatment in emergency departments. Among children ages 0-14 years, TBI causes an estimated 2,685 deaths, 37,000 hospitalizations, and 435,000 emergency department visits. The number of people with TBI who do not receive medical care is unknown. In Montana, both hospitalization and death due to TBI have similar distributions by age and gender (Figures 1 and 2). Males are roughly twice as likely to be hospitalized and three times as likely to die as are females. Those aged 15-34 and 65 and older are more likely to be hospitalized or die from TBI than other age groups. Finally, American Indians are somewhat more likely to die from TBI than individuals of other races.

Figure 1. TBI Death Rates by Selected Characteristics, Montana, 2006-2008

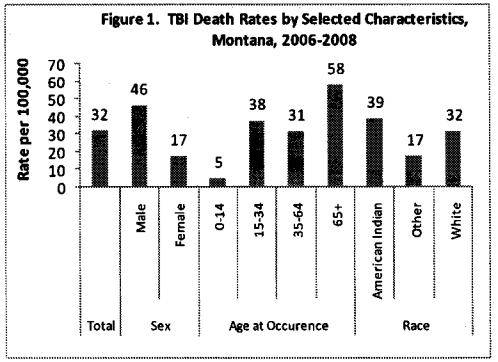
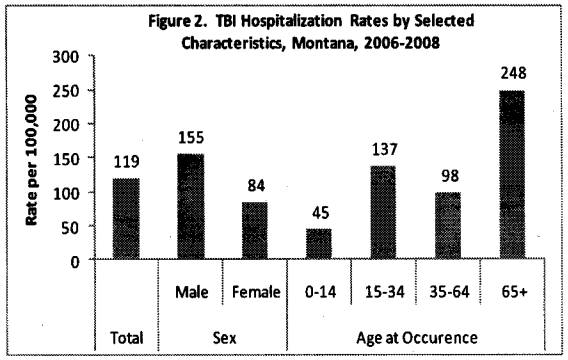


Figure 2. TBI Hospitalization Rates by Selected Characteristics, Montana, 2006-2008



The 2008 Behavioral Risk Factor Surveillance System (BRFSS) survey asked several questions about TBI among adults. Table 1 highlights the TBI experience reported by persons in selected groups. Among the groups reporting high rates are American Indians, people who earn less than $15,000 per year, and people who have not obtained a high school degree. Also, people with a disability, people with fair or poor health status, and people who are unemployed were significantly more likely to have reported a brain injury.

The BRFSS survey data also show that an estimated 9,400 Montana households report having one or two adults currently limited by a brain injury (data not shown). Of those, about 2,400 households report needing additional help that they are unable to get.

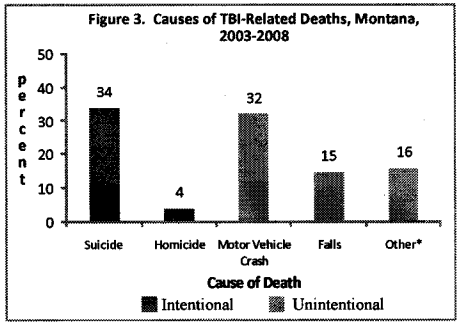
Table 1. Prevalence of Self-Reported Brain Injury by Selected Characteristics
Montana Adults, 2008, BRFSS

	Ever Had a Brain Injury	
	%	95% Confidence Interval*
All Adults	5.2	4.5 - 6.0
Education:		
<High School	10.4	6.3 - 16.7
High School	4.5	3.4 - 5.8
Some College	6.0	4.7 - 7.5
College Degree	4.3	3.4 - 5.4
Income:		
<$15,000	12.7	8.9 - 17.8
$15,000 - $24,999	5.6	4.0 - 7.8
$25,000 - $49,999	5.1	4.0 - 6.6
$50,000 - $74.999	3.1	2.1 - 4.6
$75,000 +	4.1	2.9 - 5.7
Race/Ethnicity:		
White, non-Hispanic	4.8	4.1 - 5.6
American Indian	10.4	6.7 - 15.7
Other or Hispanic	7.6	4.0 - 13.9
Disability:		
Disability	12.0	10.1 - 14.3
No Disability	2.9	2.4 - 3.6
Marital Status		
Unmarried	6.4	5.1 - 7.8
Married	4.5	3.7 - 5.3
General Health Status		
Fair/poor	11.9	9.4 - 14.4
Good/Very good/ Excellent	4.1	3.4 - 4.8
Employment		
Employed	4.0	3.3 - 4.8
Unemployed	7.2	5.8 - 8.6

* Non-overlapping confidence intervals indicate a statistical difference

What causes TBI among Montanans?

Figure 3. Causes of TBI-Related Deaths, Montana, 2003-2008

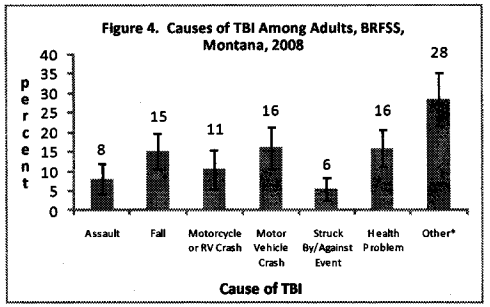


* Other includes non-traumatic deaths, pedal cycle accidents, motorcycle accidents, all-terrain/off road vehicle accidents, animal-related accidents, drowning, other non-motor vehicle accidents, and undetermined TBI deaths.

On average, 300 people die each year in Montana due to a TBI. The most common causes are suicide (typically firearm induced), motor vehicle crashes, and falls. Four out of five TBI deaths in Montana can be attributed to these causes. While collectively other causes of TBI-related deaths make up about 16% of the total number of deaths, individual causes within this category accounted for less than 5% of the deaths (Figure 3). These data are similar to the United States on a whole. Finally, over 60% of TBI-related deaths in Montana are due to an unintentional cause (Figure 3). Self-reported causes of TBI from the BRFSS survey are consistent with those leading to TBI deaths (Figure 4). These statistics raise important questions about why Montana has such a high rate of TBI. Motor vehicle crashes and falls account for the highest percent of unintentional TBI-related injuries. Lack of seat belt use and driving while under the influence of alcohol and/or drugs play a large role in increasing the risk for obvious reasons. Important strategies for reducing the risk of TBI include raising awareness about safe driving, suicide prevention, fall prevention, recognizing and treating early signs of stroke, and wearing helmets with activities that might result in an impact to the head are needed. Ongoing, targeted, effective prevention is essential.

In Montana, approximately 25 people a month die from a TBI

Figure 4. Causes of TBI Among Adults, BRFSS, Montana, 2008



* Other includes pedal cycle accidents, equestrian accidents, sports or recreation related events, lack of oxygen, and other causes.

Are we meeting national goals?

Healthy People 2010 Indicator: Reduce hospitalizations for nonfatal head injuries

Target: 45 hospitalizations per 100,000 population

MT (2008): 112 hospitalizations per 100,000 population

Healthy People 2010 presents health objectives that are used to measure progress toward increasing quality and years of healthy life while also eliminating health disparities in the United States. There are 28 focus areas, including unintentional injury and violence. In 1998, the baseline measure for nonfatal head injuries was 60.6 hospitalizations per 100,000 population. The target in 2010 is 45 hospitalizations per 100,000 population. Montana currently has a TBI hospitalization rate 2.5 times higher than the Healthy People 2010 target, and clearly trending above baseline.